

Safety Guidelines for the Student

Safety

Before you work in the laboratory, read these safety rules. Ask your teacher to explain any rules that you do not completely understand. Refer to these rules later on if you have any questions about safety in the science classroom.

Directions

- Know where the fire extinguisher, fire blanket, shower, and eyewash are located in your classroom.
- Read all directions and make sure that you understand them before starting an investigation or lab activity. If you do not understand how to do a procedure or how to use a piece of equipment, ask your teacher.
- Do not begin any investigation or touch any equipment until your teacher has told you to start.
- Never experiment on your own. If you want to try a procedure that the directions do not call for, ask your teacher for permission first.
- If you are hurt or injured in any way, tell your teacher immediately.

Dress Code

- Wear goggles when using glassware, sharp objects, or chemicals; or when heating an object or working with anything that can easily fly up into the air and hurt someone's eye.
- Tie back long hair or hair that hangs in front of your eyes.
- Remove any article of clothing—such as a loose sweater or scarf—that hangs down and may touch a flame, chemical, or piece of equipment.
- Observe all safety icons for the wearing of eye protection, gloves, and aprons.

Heating and Fire Safety

- Keep your work area neat, clean, and free of extra materials.
- Use only borosilicate glass for heating substances.
- Never reach over a flame or heat source.

- Point objects that are being heated away from you and others.
- Never heat a substance or an object in a closed container.
- Use oven mitts, clamps, tongs, or a test tube holder to hold heated items.
- Never touch an object that has been heated. If you are unsure of whether something is hot, treat it as though it is.
- After heating test tubes, place them in a test tube rack.
- Do not throw hot substances into the trash. Wait for them to cool and dispose of them in the container provided by your teacher.

Chemical Safety

- Always wear goggles when working with any type of chemical, even household items such as baking soda.
- Stand when you are working with chemicals. Pour them over a sink or your work area, not over the floor. If you spill a chemical or get it on your skin, tell your teacher right away.
- If you get a chemical in your eye, use the eyewash immediately.
- Never touch, taste, or sniff any chemicals in the lab. If you need to determine odor, waft. To waft, hold the chemical 15 cm (6 in.) away from your nose, and use your fingers to bring fumes from the container to your nose.
- Keep lids on all chemicals you are not using.
- Use materials only from properly labeled containers.
- Never use more chemicals than the procedure calls for.
- When diluting acid with water, always add acid to water.
- Never put unused chemicals back into the original containers. Dispose of extra chemicals in the container provided by your teacher.
- Always wash your hands after handling chemicals.



Electrical Safety

- Never use lamps or other electrical equipment with frayed cords.
- Make sure no cord is lying on the floor where someone can trip over it.
- Do not let a cord hang over the side of a counter or table so that the equipment can easily be pulled or knocked to the floor.
- Never let cords hang into sinks or other places where water can be found.
- Turn off all power switches before plugging an appliance into an outlet.
- Never touch electrical equipment with wet hands.
- Never try to fix electrical problems. Immediately inform your teacher of any problems.
- Unplug an electrical cord by pulling on the plug, not the cord.

Glassware and Sharp-Object Safety

- Use only clean glassware that is free of chips and cracks.
- If you break glassware, tell your teacher right away.
- If you use a microscope that has a mirror, do not aim the mirror directly at the sun as you can damage your eyes.
- Use knives and other cutting instruments carefully. Always wear eye protection and cut away from yourself.

- Clean glassware according to your teacher's instructions after you use it.
- Use an appropriately sized test tube for the quantity of chemicals you are using, and store test tubes in a test tube rack.

Animal Safety

- Never hurt an animal.
- Touch animals only when necessary. Follow your teacher's instructions for handling animals.
- Wear gloves when handling animals or preserved specimens.
- Specimens for dissection should be properly mounted and supported.
- Do not cut a specimen while holding it in your hands.
- Do not open containers of live microorganisms unless you are directed to do so.
- Dispose of preserved specimens as directed by your teacher.
- Always wash your hands with soap and water after working with animals or specimens.

Cleanup

- Follow your teacher's instructions for the disposal or storage of supplies.
- Clean your work area and pick up anything that has dropped to the floor.
- Wash your hands.

Safety Symbols

Safety is the priority in the science classroom. In all of the activities in this textbook, safety symbols are used to alert you to materials, procedures, or situations that could be potentially hazardous if the safety guidelines are not followed. Learn what you need to do when you see these icons, and read all lab procedures before coming to the lab so you are prepared. Always ask your teacher if you have questions.



Animal Safety Never injure an animal.

Follow your teacher's instructions for handling specific animals or preserved specimens. Wash your hands with soap and water when finished handling animals or preserved specimens.



Apron Wear an apron when using any substance that could cause harm if spilled on you. Stand whenever possible to avoid spilling in your lap.



Breakage Use caution when handling items that may break, such as glassware and thermometers. Always store test tubes in a test tube rack.



Chemical Safety Always wear goggles when working with chemicals. Stand whenever possible when working with chemicals to avoid spilling on your lap. Tell your teacher immediately if you spill chemicals on yourself, the table, or floor. Never taste any substance or chemical in the lab. Always wash your hands after working with chemicals.



Disposal Follow your teacher's instructions for disposing of all waste materials, including chemicals, specimens, or broken glass.



Electrical Safety Keep electrical cords away from water to avoid shock. Do not use cords with frayed edges. Unplug all equipment when done.



Fire Safety Put on safety goggles before lighting flames. Remove loose clothing and tie back hair. Never leave a lit object unattended. Extinguish flame as soon as you finish heating.



Fumes Always work in a well-ventilated area. Bring fumes up to your nose by wafting with your fingers instead of sniffing.



General Safety Always follow the safety rules and ask your teacher if you are unsure about something. If you are designing your own experiment, get your teacher's approval on your plan before you start. Think about which safety rules you must follow in your experiment.



Gloves Always wear gloves to protect your skin from possible injury when working with substances that may be harmful or when working with animals.



Hand Washing Wash your hands with soap and water after working with soil, chemicals, animals, or preserved specimens.



Hot/Glove Always wear gloves such as oven mitts when handling larger hot materials.



Poison Never touch, taste, or inhale chemicals. Most chemicals are toxic in high concentrations. Wear goggles and wash your hands.



Safety Goggles Always wear safety goggles when working with chemicals, heating any substance, or using a sharp object or any material that could fly up and injure you or others.



Sharp Objects Use scissors, knives, or razor tools with care. Wear goggles when cutting something with scalpels, knives, or razor tools. Always cut away from yourself.